

1 67. (New) The plurality of transmitters of claim 61 wherein said first time intervals are controlled
2 according to a first sequence, and said second time intervals are controlled according to a second sequence,
3 and said first sequence is synchronized with said second sequence.

REMARKS

Claims 33-67 were presented for examination. Claims 33, 40, 47, 54, and 61 were rejected.
Claims 34-39, 41-46, 48-53, 55-60, and 62-67 were objected to as depended upon rejected base claims.

The applicant respectfully requests reconsideration in the light of the following remarks.

Double Patenting Rejection of Claims 33, 40, 47, 54 and 61

Claims 33, 40, 47, 54 and 61 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 9 of the Partyka reference U.S. Patent number 6,188,715 (hereinafter '715).

The applicant respectfully traverses the rejection.

The Office states:

Although the conflicting claims are not identical, they are not patentably distinct from each other because **the claims of the U.S. Patent 6,188,715 does not disclose** the transmitter for transmitting two different transmissions such as a routine transmission at first time intervals and an urgent transmission at transmission opportunities at second time interval. However, the claims of the U.S. Patent 6,188,715 recites that the transmitter for intermittently transmitting a carrier and plurality of frequencies at time interval. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to transmit intermittently the carrier at time interval and plurality of frequencies by using routine transmission and urgent transmission in order to generate a future transmission. Claims 47, 54 and 61 of the instant application are similar to the claims 1 and 10 of the U.S. Patent 6,188,715.

(emphasis added)

The applicant respectfully submits that the claims of the present invention and Patent '715 are fundamentally different. The claims of the present invention and the claims of Patent '715 claim fundamentally different invention.

Furthermore, the applicant respectfully submits that the Office assertion that the present invention with its claims is an obvious improvement of the Patent '715 is in direct contradiction with the design intent, teaching, and claims of the Patent '715.

Both, Patent '715 and the present invention are concerned with similar systems and both offer a solution to a similar problem, however the present invention provides a solution that is fundamentally different and vastly superior over that offered in Patent '715.

Namely, both, Patent '715 and the present invention are concerned with a system for conveying short intermittent messages from a plurality of transmitters to a receiver, where each transmitter transmits at varied transmission frequency and independently of other transmitters and independently of the receiver. Furthermore, the present invention (in principle) and Patent '715 (in at least one aspect) are concerned with the problem of transmitting "urgent"(alarm) messages with little delay in such system where routine transmissions are transmitted at time intervals that are set to be relatively very large (for example to conserve battery energy). Patent '715 proposes to solve this problem in a specific way that has many disadvantages. The present invention discloses a fundamentally different solution that overcomes these disadvantages. This is clearly evident in the teaching of Patent '715 as contrasted with the teaching and the claims of the present invention.

Claim 33 recites:

33. (New) A telemetry system comprising:

a plurality of transmitters, each of which is for transmitting intermittently and at various transmission frequencies: (a) routine transmissions, at first time intervals, and (b) **urgent transmissions**, *in response to urgency, at transmission opportunities at second time intervals*; wherein each of said plurality of transmitters is for transmitting independently of any receiver for receiving any of said transmissions and independently of any of said plurality of transmitters, and *a receiver for holding, simultaneously for each of said plurality of transmitters, data indicative of an expected time and an expected frequency of at least one future transmission opportunity.*

(emphasis added)

The claim reflects the ability of the present invention to operate as a one-way only transmission system where many transmitters communicate short intermittent messages over varied frequencies to a receiver without a benefit of a reverse communication link and, furthermore, to convey urgent (alarm) messages with a delay that can be much shorter than the time interval between relatively very infrequent routine status transmissions.

More specifically, the italicized text reflects the ability of a system, according to the present invention, to convey such urgent (alarm) messages at specific time and frequency coordinates - "transmission opportunities" - which allows the receiver to know when and at what frequency an urgent (alarm) transmission can potentially occur.

For example, as described in the exemplary implementation description of the present invention, if the time interval between routine transmissions is approximately 100 seconds and transmission opportunities are at 250ms second intervals, then there are approximately 400 transmission opportunities between each two consecutive routine transmissions. In such case, an alarm message can be sent at the earliest opportunity that is not more than 250ms second after an alarm occurs. Furthermore, the receiver can predictably attempt to intercept the first as well as each following urgent transmission (i.e. tune to the right frequency at the right time to receive the first and any following urgent transmission) as the receiver holds (knows) the time and the frequency of the potential urgent transmission (even if it may not know if a transmission will actually occur). Thus, if signal condition at the transmission opportunity permits, a single transmission may be sufficient to convey the alarm information. Thus, the delay is kept below acceptable limit while the number of transmissions and the necessary energy drain from the battery is minimized. This is true regardless of how many frequencies each transmitter uses thus there is no need to pre-select a special frequency or frequencies to transmit the alarm messages. This has advantages in that while the delay is kept below acceptable limit, the number of alarm messages needed to be sent to reliably convey the information to the receiver is minimized while at the same time the transmitter may use all available frequencies to transmit the alarm messages. This is in stark contrast to the solution proposed by Patent '715 as contrasted in more details later.

Claim 1, 9, and 10 of Patent '715 recite:

1. A telemetry system comprising:

a plurality of transmitters, each of which intermittently transmits a carrier at time intervals and at a plurality of frequencies that are independent of the time intervals and frequencies at which the other transmitters transmit and that are independent of a receiver of said carrier; and

said receiver comprising means for simultaneously detecting a plurality of carriers transmitted by said plurality of transmitters

wherein said means for simultaneously detecting a plurality of carriers comprises sampling and time-domain-to-frequency-domain transform, and is capable of producing an indicium of the signal strength of each of said plurality of carriers.

9. The telemetry system of claim 1 wherein said receiver holds data indicative of: (1) the time of at least one future transmission from each of said plurality of said transmitters, and (2) the frequency of at least one future transmission from each of said plurality of said transmitters.

10. The telemetry system of claim 1 wherein said receiver holds data indicative of: (1) a time of at least one future transmission from each of said plurality of said transmitters, and (2) a frequency of at least one future transmission from each of said plurality of said transmitters, and

wherein said receiver tunes at least one of said frequency selective circuits to one of said plurality of carriers based on said indicium, said time of at least one future transmission, and said frequency of at least one future transmission.

Neither Claim 1 nor claim 9 nor claim 10 of Patent '715 comprises alone or in combination any of the elements of the Claim 33 related to transmitting urgent transmissions. Namely; (1) transmitters capable of transmitting urgent transmissions at transmission opportunities, and (2) receiver capable of holding time and frequency of future transmission opportunities.

Thus, it is clear that the Claim 33 and claims of the Patent '715 are different.

The question remains whether Claim 33 can be anticipated or derived in an obvious way from the teaching of Patent '715. The applicant respectfully submits that the Office assertion that this is so, is in **contradiction** with the teaching of Patent '715.

Patent '715 is concerned, in at least one aspect, with the problem of sending urgent (alarm) messages.

The specification of Patent '715 states:

It is still further object of this invention to provide a method that allows such system to convey the information about an abnormal sensor condition as soon as the condition occurs regardless of the transmission period of the associated transmitters. (col. 4, line 44-49).

(emphasis added)

However, the proposed solution is fundamentally different and in contrast with the present invention. Furthermore, the specification of Patent '715 itself points out, in the proposed solution, to some problems and compromises that the present invention overcomes.

The Patent '715 specification states:

According to a fifth aspect of this invention, there is provided a method that allows such a system to convey the information about an abnormal sensor condition as soon as the condition occurs regardless of the transmission period of the associated transmitters. **The method is based on selecting an alarm frequency or preferably a group of alarm frequencies common for all transmitters. The alarm frequencies are used by the transmitters when an alarm or an abnormal sensor condition occurs, wherein when such a condition occurs in a transmitter, the transmitter transmits the messages sequentially on the alarm frequencies for a predetermined period of time** after which the transmitter resumes transmission according to the sequence before the alarm condition, wherein **receiver monitors the alarm frequencies during the time between the reception of the scheduled messages from the transmitters.** (col.6 line 17-31)

.....

In the preferred embodiment, the transmission of the alarm packet is repeated a predetermined number of times using a plurality of predetermined number of times using a plurality of predetermined alarm frequencies in such a way that the transmission frequency is changed after each single packet transmission frequency according to a predetermined fixed sequence. **In the preferred implementation, when the alarm packets are transmitted, the time intervals between transmissions are minimal; when one transmission is completed, the transmitter immediately programs to the next frequency and repeats the packet transmission, etc.** (col. 8, line 42-52)

.....

In the preferred embodiment, a 26 MHz bandwidth is divided into 173 channels, channel having 150kHz. Then 8 channels are selected so that they are separated by large but uneven frequency intervals. (col. 9, line 19-20).

.....

In the preferred embodiment, these channels are reserved for the transmissions of abnormal sensor status and will be referred to as alarm frequencies. These frequencies are excluded from use if the sensor status is normal. In addition, channels on each side and immediately adjacent to each alarm frequency are also excluded from use in order to minimize interference with alarm frequencies by the transmitters transmitting status messages. (col. 9, line 26-33).

(emphasis added)

Thus, Patent '715 tries to solve the problem of transmitting alarm messages by a brute force. I.e. each transmitters transmit alarm messages as soon as an alarm condition occurs and repeats the transmissions many times at different frequencies in such way that when one transmission ends the next starts almost immediately at a different frequency. The receiver searches for alarm transmissions at all frequencies all or most of the time when it is not occupied with reception of scheduled routine transmissions. Because the receiver does not know when and where (at what frequency) for a given transmitter, an alarm can be transmitted, it is forced to look at all the frequencies where such transmission can occur. To improve probability that the receiver can intercept such unscheduled alarm transmission, a compromise is proposed to use only a very small subset of available frequencies. According to the teaching of Patent '715, it is recognized that if all available frequencies were used, it would require a lot more transmissions to convey the alarm message. This is undesirable. On the other hand designating some frequencies for alarm transmissions has disadvantages in that the system is more vulnerable to adverse signal conditions e.g. interference.

The Patent '715 specification explicitly states:

In the preferred embodiment there are eight frequencies used for this purpose, as described below. It should be noted that the existence of the predetermined alarm frequencies is not necessary albeit advantageous. In an alternative design, the transmitter may follow the normal hopping pattern but at an increased repeating the alarm message a predetermined number of times. The essence of the idea is that the alarm message being infrequent can afford greater transmission overhead and can be repeated many times. **If the alarm message is transmitted at fewer frequencies, a faster response of the receiver is obtainable on average, however the system may be more vulnerable to a deliberate interference.** (col. 8, line 53-65)

(emphasis added)

Thus, the solution proposed in Patent '715 has disadvantages in that to convey an alarm message the transmitters are required to transmit more transmissions while at the same time the number of frequencies that the urgent transmission can use is limited to a relatively very small subset.

Present application describes numerical relations for one reasonable assumption of system parameters (Page 20, line 19-32). Accordingly, with blind (unassisted) scan of all frequencies by the receiver, there may be a need to transmit several hundreds transmissions to convey one alarm message with a reasonable confidence! This is in stark contrast with the solution described and claimed by the present application, in which the number of transmissions needed is just a few to overcome fading and interference, but is not dictated by the receiver need to catch (acquire) unexpected urgent transmissions (even if the number of frequencies used is large).

Surely, if the solution that overcomes these disadvantages was obvious to the applicant at the time of application of Patent '715, such solution would be described in an exemplary preferred implementation rather than the inferior solution as proposed in the specification of Patent '715. Thus, **the fact that Patent '715 aims to solve the problems of urgent transmissions, but fails to arrive to the superior solution as disclosed and claimed in the present application should serve as a convincing proof (if there is such thing) that the present invention is not an obvious extension of Patent '715 invention.**

For these reasons, the applicant respectfully submits that Claim 33 of the present invention is patentably distinct from claims of Patent '715 and is not disclosed or anticipated by teaching or claims of Patent '715.

Consequently, the applicant respectfully submits that the Office rejection of Claim 33 based on double patenting doctrine is traversed and that Claim 33 is allowable.

Claim 40 recites:

40. (New) A method comprising:

transmitting, by each of a plurality of transmitters, intermittently and at various transmission frequencies: (a) routine transmissions, at first time intervals, and (b) urgent transmissions, in response to urgency, at transmission opportunities at second time intervals; wherein said transmissions are independent of any receiver for receiving any of said transmissions and independent of any of said plurality of transmitters, and

holding, in a receiver, simultaneously for each of said plurality of transmitters, data indicative of an expected time and an expected frequency of at least one future transmission opportunity.

(emphasis added)

For the reasons explained in conjunction with Claim 33, the applicant respectfully submits that Claim 40 of the present invention is patentably distinct from claims of Patent '715 and is not disclosed or anticipated by teaching or claims of Patent '715. Consequently, the applicant respectfully submits that the Office rejection of Claim 40 based on double patenting doctrine is traversed and that Claim 40 is allowable.

Claim 47 recites:

47. (New) A telemetry receiver comprising:

logic for holding, simultaneously for each plurality of transmission opportunities, data indicative of an expected time and an expected frequency of at least one future opportunity, wherein each said plurality of opportunities is for a different one of a plurality of transmitters, and wherein each of said plurality of transmitters is for transmitting intermittently, at various transmission frequencies: (a) routine transmissions, at time intervals, and (b) urgent transmissions, in response to urgency, at at least one of said opportunities; wherein each of said plurality of transmitters is for transmitting independently of any receiver for receiving any of said transmissions and independently of any other of said plurality of transmitters, and

a frequency selective circuit for receiving said transmissions

(emphasis added)

For the reasons explained in conjunction with Claim 33, the applicant respectfully submits that Claim 47 of the present invention is patentably distinct from claims of Patent '715 and is not disclosed or anticipated by teaching or claims of Patent '715. Consequently, the applicant respectfully submits that the Office rejection of Claim 47 based on double patenting doctrine is traversed and that Claim 47 is allowable.

Claim 54 recites:

54. (New) A plurality of telemetry transmitters, each of which comprises:

a circuit for transmitting intermittently and at various transmission frequencies: (a) routine transmissions, at first time intervals, and (b) urgent transmissions, in response to urgency, at transmission opportunities at second time intervals, and

logic for controlling frequency and time for said transmission opportunities and said routine transmissions independently of any receiver for receiving any of said transmissions and independently of any other of said plurality of transmitters.

(emphasis added)

For the reasons explained in conjunction with Claim 33, the applicant respectfully submits that Claim 54 of the present invention is patentably distinct from claims of Patent '715 and is not disclosed or anticipated by teaching or claims of Patent '715. Consequently, the applicant respectfully submits that the Office rejection of Claim 54 based on double patenting doctrine is traversed and that Claim 54 is allowable.

Claim 61 recites:

61. (New) A plurality of telemetry transmitters, each of which comprises:

a circuit for transmitting intermittently and at various transmission frequencies: (a) routine transmissions, at first time intervals, and (b) urgent transmissions, in response to urgency, at transmission opportunities at second time intervals, and

logic for including in at least a portion of said routine transmissions data indicative of at least one of: (a) frequency pattern for varying frequency for said transmission opportunities and (b) time pattern for varying said second time intervals;

wherein each of said plurality of transmitters is for transmitting independently of any receiver for receiving any of said transmissions and independently of any other of said plurality of transmitters.

(emphasis added)

For the reasons explained in conjunction with Claim 33, the applicant respectfully submits that Claim 61 of the present invention is patentably distinct from claims of Patent '715 and is not disclosed or anticipated by teaching or claims of Patent '715. Consequently, the applicant respectfully submits that the Office rejection of Claim 61 based on double patenting doctrine is traversed and that Claim 61 is allowable.

Objections to Claims 34-39, 41-46, 48-53, 55-60, and 62-67

Claims 34-39, 41-46, 48-53, 55-60, and 62-67 were objected to as depended upon rejected base claims.

The applicant respectfully submits that in the light of the remarks regarding base claims 33, 40, 47, 54 and 61, now claims 34-39, 41-46, 48-53, 55-60, and 62-67 are allowable because they depend on the base claims whose rejection is traversed.

Additional remarks

The Office should be aware of another simultaneously pending application recently issued as a patent 6,466,138 (application number 09/483,817 filed Jan. 15, 2000) that includes similar subject matter.

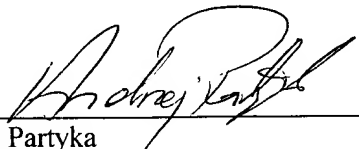
The applicant respectfully requests that the Office corrects filing date (correct filing date from September 29, 1999 to September 30, 1999) according to the request and evidence sent in communication filed on December 7, 1999. The applicant requests that new filing receipt with corrected filing date is issued.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the Office action mailed October 8, 2002, applicant requests reconsideration of the application pursuant to 37 CFR 1.111 and request that the Examiner allow claims 33-67 and pass the application to issue.

Applicants respectfully submit that the claims 33-67 are allowable and request that the Examiner allow claims 33-67 and pass the application to issue.

Respectfully,

By 
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APPENDIX A

Amendments to the Claims Pursuant to 37 CFR 1.121(c)(1)(ii)

No claim has been amended.